

LIST OF PUBLICATIONS

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Diplomarbeit (Master's thesis)

Ein a-priori-Modell aus der mathematischen Theorie der Epidemien (An a priori model from the mathematical theory of epidemics). Universität Münster (Germany) 1973

Dissertation (Ph.D thesis)

Die räumliche Ausbreitung einer Epidemie in einer Population von suszeptiblen Individuen (The spatial spread of an epidemic in a population of susceptible individuals). Universität Münster (Germany) 1976 (see [1], [2] in the subsequent list)

Habilitationsschrift (habilitation thesis)

Lineare und nicht lineare Erneuerungssätze (Linear and nonlinear renewal theorems). Universität Heidelberg (Germany) 1982 (see [11], [12], [13] in the subsequent list)

Book

Mathematics in Population Biology. Princeton University Press, Princeton 2003

Refereed Publications

- [1] A model for the spatial spread of an epidemic. *J. Math. Biology* **4** (1977), 337-351
- [2] The asymptotic behaviour of solutions of nonlinear integral equations. *Math. Zeitschrift* **157** (1977), 141-154
- [3] Asymptotic estimates of the solutions of nonlinear integral equations and asymptotic speeds for the spread of populations. *J. Reine Angew. Math.* **306** (1979), 94-121
- [4] Density-dependent regulation of spatially distributed populations and their asymptotic speed of spread. *J. Math. Biology* **8** (1979), 173-187
- [5] On a class of Hammerstein integral equations. *Manuscr. math.* **29** (1979), 49-84
- [6] On the boundedness and the asymptotic behaviour of the non-negative solutions to Volterra-Hammerstein integral equations. *Manuscr. math.* **31** (1980), 379-412
- [7] Local stability in epidemic models for heterogeneous populations. *Mathematics in Biology and Medicine* (V. Capasso, E. Grosso, S.L. Paveri-Fontana, eds.), 185-189. Lecture Notes in Biomathematics 57. Springer 1985
- [8] (with O. Diekmann, H. Heijmans) On the stability of the cell size distribution. *J. Math. Biology* **19** (1984), 227-248
- [9] Renewal theorems for linear discrete Volterra equations. *J. Reine Angew. Math.* **353** (1984), 55-84

- [10] Renewal theorems for linear periodic Volterra integral equations. *J. Integral Equations* **7** (1984), 253-277
- [11] Renewal theorems for some mathematical models in epidemiology. *J. Integral Equations* **8** (1985), 185-216
- [12] (with O. Diekmann, H. Heijmans) On the stability of the cell size distribution. II. Time-periodic developmental rates. *Computers and Mathematics with Applications* Vol. **12 A** (1986), Special Issue 'Advances in Hyperbolic Partial Differential Equations' Vol. 3, 491-512
- [13] (with H.W. Hethcote) Stability of the endemic equilibrium in epidemic models with subpopulations. *Math. Biosciences* **75** (1985), 205-227
- [14] (with Clément, Ph.; Diekmann, O.; Gyllenberg, M.; Heijmans, H.J.A.M.) Perturbation theory for dual semigroups. I. The sun-reflexive case. *Math. Annalen* **277** (1987), 709-725
- [15] Well-posedness of physiologically structured population models for *Daphnia magna* (How biological concepts can benefit by abstract mathematical analysis). *J. Math. Biology* **26** (1988), 299-317
- [16] Asymptotic proportionality (weak ergodicity) and conditional asymptotic equality of solutions to time-heterogeneous sublinear difference and differential equations. *J. Differential Equations* **73** (1988), 237-268
- [17] (with Ph. Clément, O. Diekmann, M. Gyllenberg, H.J.A.M. Heijmans) Perturbation theory for dual semigroups. II. Time-dependent perturbations in the sun-reflexive case. *Proc. Royal Soc. Edinburgh* **109 A** (1988), 145-172
- [18] (with K. Schumacher) Some theoretical and numerical aspects of modeling dispersion in the development of ectotherms. *Computers and Mathematics with Applications* **15** (1988), 565-594
- [19] (with V. Capasso) A threshold theorem for a reaction diffusion epidemic system. *Differential Equations and Applications* (R. Aftabizadeh, ed.) Ohio Univ. Press, 1988
- [20] (with Ph. Clément, O. Diekmann, M. Gyllenberg, H.J.A.M. Heijmans) A Hille-Yosida theorem for a class of weakly* continuous semigroups. *Semigroup Forum* **38** (1989), 157-177
- [21] (with Ph. Clément, O. Diekmann, M. Gyllenberg, H.J.A.M. Heijmans) Perturbation theory for dual semigroups. III. Nonlinear Lipschitz continuous perturbations in the sun-reflexive case. Proceedings of the meeting *Volterra Integro-Differential Equations in Banach Spaces and Applications*, Trento 1987. Longman 1989
- [22] (with H.J. Bremermann) A competitive exclusion principle for pathogen virulence. *J. Math. Biology* **27** (1989), 179-190
- [23] (with J.A.P. Heesterbeek) How to estimate the efficacy of periodic control of an infectious plant disease. *Math. Biosciences* **93** (1989), 15-19
- [24] (with Ph. Clément, O. Diekmann, M. Gyllenberg, H.J.A.M. Heijmans) Perturbation theory for dual semigroups. IV. The intertwining formula and the canonical pairing.

Proceedings on the meeting *Semigroup Theory and Applications*, Trieste 1987. Marcel Dekker 1989

- [25] (with H.L. Smith) Quasiconvergence and stability for strongly order preserving semiflows. *SIAM J. Math. Analysis* **21** (1990), 673-692
- [26] (with H.L. Smith) Monotone semiflows in scalar non-quasi-monotone functional differential equations. *J. Math. Analysis and Applications* **150** (1990), 289-306
- [27] "Integrated semigroups" and integrated solutions to the abstract Cauchy problem. *J. Math. Analysis and Applications* **152** (1990), 416-447
- [28] Semiflows generated by Lipschitz perturbations of non-densely defined operators. *Differential and Integral Equations* **3** (1990), 1035-1066
- [29] Analysis of age-structured population models with an additional structure. *Mathematical Population Dynamics*, Proceedings of the 2nd International Conference, Rutgers Univ. 1989 (O. Arino, D.E. Axelrod, M. Kimmel, eds.). Lecture Notes in Pure and Applied Mathematics **131**, 115-126. Marcel Dekker 1991
- [30] (with S. Busenberg and K.L. Cooke) Demographic change and persistence of HIV/AIDS in a heterogeneous population. *SIAM J. Appl. Math.* **51** (1991), 1030-1052
- [31] (with H.L. Smith) Convergence for strongly order preserving semiflows. *SIAM J. Math. Anal.* **22** (1991), 1081-1101
- [32] (with O. Diekmann, M. Gyllenberg) Perturbation theory for dual semigroups V. Variation of constants formulas. *Semigroup Theory and Evolution Equations* (Ph. Clément, E. Mitidieri, B. de Pagter, eds.), 107-123. Proceedings of the 2nd International Conference in Delft, Sep. 1989. Marcel Dekker 1991
- [33] (with O. Diekmann, M. Gyllenberg) Semigroups and renewal equations on dual Banach spaces with application to population dynamics. *Delay Differential Equations and Dynamical Systems* (S. Busenberg, M. Martelli; eds.), 116-120. Lecture Notes in Mathematics **1475**, Springer 1991
- [34] (with H.L. Smith) Strongly order preserving semiflows generated by functional differential equations. *JDE* **93** (1991), 332-363
- [35] (with S. Busenberg and M. Iannelli) Global Behavior of an age-structured S-I-S model. *SIAM J. Math. Anal.* **22** (1991), 1065-1080
- [36] Stability change of the endemic equilibrium in age-structured models for the spread of S-I-R type infectious diseases. *Differential Equations Models in Biology, Epidemiology and Ecology* (S. Busenberg, M. Martelli, eds.), 139-158. Proceedings of the International Conference in Claremont, Jan. 1990. Lecture Notes in Biomathematics **92**, Springer 1991
- [37] Convergence results and a Poincaré-Bendixson trichotomy for asymptotically autonomous differential equations. *J. Math. Biol.* **30** (1992), 755-763
- [38] Epidemic and demographic interaction in the spread of potentially fatal diseases in growing populations. *Math. Biosci.* **111** (1992), 99-130

- [39] (with O. Diekmann and M. Gyllenberg) Perturbing semigroups by solving Stieltjes renewal equations. *Diff. Integral Equations* **6** (1993), 155-181
- [40] Persistence under relaxed point-dissipativity (with applications to an endemic model) *SIAM J. Math. Anal.* **24** (1993), 407-435
- [41] (with C. Castillo-Chavez) How may infection-age dependent infectivity affect the dynamics of HIV/AIDS? *SIAM J. Appl. Math.* **53** (1993), 1447-1479
- [42] (with O. Diekmann, M. Gyllenberg, J.A.J. Metz) The 'cumulative' formulation of (physiologically) structured population models. *Evolution Equations, Control Theory, and Biomathematics* (Ph. Clément, G. Lumer; eds.), 145-154. Lecture Notes in Pure and Applied Mathematics 155. Marcel Dekker 1994
- [43] Asymptotically autonomous differential equations in the plane. *Rocky Mountain J. Math.* **24** (1994), 351-380
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- [47] (with O. Diekmann and M. Gyllenberg) Perturbing evolutionary systems by step responses and cumulative outputs. *Diff. Int. Eq.* **8** (1995), 1205-1244
- [48] (with Zhilan Feng) Recurrent outbreaks of childhood diseases revisited: the impact of isolation. *Math. Biosci.* **128** (1995), 93-130
- [49] Positive perturbations of dual and integrated semigroups. *Advances in Mathematical Sciences and Applications* **6** (1996), 445-507
- [50] (with T. Matsumoto, S. Oharu) Nonlinear perturbations of a class of integrated semigroups. *Hiroshima Math. J.* **26** (1996), 433-473
- [51] On commutative sums of generators. *Rendiconti Istit. Mat. Univ. Trieste* **28** (1997), Suppl., 421-451
- [52] Remarks on resolvent positive operators and their perturbation. *Discrete and Continuous Dynamical Systems* **4** (1998), 73-90
- [53] (with O. Diekmann, M. Gyllenberg, J.A.J. Metz) On the formulation and analysis of general deterministic structured population models. I. Linear theory. *J. Math. Biol.* **36** (1998), 349 - 388
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- [55] Balanced exponential growth of operator semigroups. *J. Math. Anal. Appl.* **223** (1998), 30-49

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- [57] (with N. Navarova) Remarks on an environmental control problem. *Mathematical Models in Medical and Health Sciences* (M.A. Horn, G. Simonett, G.F. Webb; eds.), 267-279. Vanderbilt University Press, 1998
- [58] (with P. van den Driessche) Global stability in cyclic epidemic models with disease fatalities. (Proceedings of the conference on Differential Equations with Applications to Biology.) *Fields Inst. Comm.* **21** (1999), 459-472
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- [60] (with O. Diekmann and M. Gyllenberg) Lack of uniqueness in transport equations with a nonlocal nonlinearity. *Math. Models Methods Appl. Sci.* **10** (2000), 581 - 591
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- [63] (with Zhilan Feng) Endemic models with arbitrarily distributed periods of infection. II. Fast disease dynamics and permanent recovery. *SIAM J. Appl. Math.* **61** (2000), 983-1012
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- [66] (with X.-Q. Zhao) A nonlocal and delayed predator-prey reaction-diffusion model. *Nonlinear Analysis RWA* **2** (2001), 145-160
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- [70] The transition through stages with arbitrary length distributions, and applications in epidemics, *Mathematical Approaches for Emerging and Reemerging Infectious Diseases : Models, Methods and Theory* (C. Castillo-Chavez with S. Blower, P. van den Driessche, D. Kirschner, and A.-A. Yakubu, eds.), 45-84. Springer, 2002
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- [73] (with André M. de Roos, Lennart Persson) Emergent Allee effects in top predators feeding on structured prey populations. *Proc. R. Soc. Lond.* **B 270** (2003), 611618
- [74] (with Maia Martcheva) Progression age enhanced backward bifurcation in an epidemic model with super-infection. *J. Math. Biol.* **46** (2003), 385-424
- [75] (with X.-Q. Zhao) Asymptotic speeds of spread and traveling waves for integral equations and delayed reaction-diffusion models. *JDE* **195** (2003), 430-470
- [76] (with J.I. Vrabie) Relatively compact orbits and compact attractors for a class of nonlinear evolution equations. *J. Dynamics Differential Eqn.* **15** (2003), 731-750
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- [78] (with P. Magal) Eventual compactness for semiflows generated by nonlinear age-structured models. *Commun. Pure Appl. Anal.* **3** (2004), 695-727.
- [79] (with Jimmy P. Mopecha) Competitive dynamics in a model for river blindness with cross protection. *Can. Appl. Math. Quart.* **4** (2005), 339-376
- [80] (with Maia Martcheva) A Metapopulation Model with Discrete Size Structure. *Nat. Resource Mod.* **18** (2005), 379-413
- [81] (with Azmy S. Ackleh and Ben G. Fitzpatrick) Rate distributions and survival of the fittest: a formulation on the space of measures. *Disc. Cont. Dyn. Sys. B* **5** (2005), 917-928
- [82] (with Steve M. Baer, Bob W. Koi, Yuri A. Kuznetsov) Multiparametric bifurcation analysis of a basic two-stage population model, *SIAM J. Appl. Math.* **66** (2006), 1339-1365
- [83] (with Jürgen Voigt) Stochastic semigroups: their construction by perturbation and approximation, *Positivity IV - Theory and Applications* (M.R. Weber, J. Voigt, eds.), 135-146, Technical University of Dresden, Dresden 2006
- [84] (with Mats Gyllenberg and Timothy Lant) Perturbing evolutionary systems on dual spaces by cumulative outputs, *Differential and Integral Equations* **19** (2006), 401-436
- [85] (with Maia Martcheva and Thanate Dhirasakdanon) Kolmogorov's differential equations and positive semigroups on first moment sequence spaces, *J. Math. Biol.* **53** (2006), 642-671, erratum, *J. Math. Biol.* **56** (2008), 577-578
- [86] Pathogen competition and coexistence and the evolution of virulence. *Mathematics for Life Sciences and Medicine.* (Y. Takeuchi, Y. Iwasa, K. Sato, eds.), 123-153, Springer, Berlin Heidelberg 2007
- [87] (with Stanley H. Faeth, Karl P. Hadeler) An apparent paradox of horizontal and vertical disease transmission, *J. Biol. Dynamics* **1** (2007), 45-62
- [88] (with Timothy Lant) Markov transition functions and semigroups of measures, *Semigroup Forum* **74** (2007), 337-369

- [89] (with Timothy Lant) Perturbation of transition functions and a Feynman-Kac formula for the incorporation of mortality, *Positivity* **11** (2007), 299-318
- [90] (with T. Dhirasakdanon and P. van den Driessche), A sharp threshold for disease persistence in host metapopulations, *J. Biol. Dynamics* **1** (2007), 363-378
- [91] (with Maia Martcheva) Infinite ODE systems modeling size-structured metapopulations, macroparasitic diseases, and prion proliferation, *Structured Population Models in Biology and Epidemiology* (P. Magal, S. Ruan, eds.), 51-113, Lecture Notes in Mathematics 1936, Springer 2008
- [92] Differentiability of convolutions, integrated semigroups of bounded semi-variation, and the non-homogeneous Cauchy problem, *J. Evolution Equations* **8** (2008), 283-305
- [93] (with Abdessamad Tridane and Yang Kuang) An epidemic model with post-contact prophylaxis of distributed length. I. Thresholds for disease persistence and extinction, *J. Biological Dynamics* **2** (2008), 221-239

Papers accepted for publication, refereed

- [94] (with Jürgen Voigt), Relatively bounded extensions of generator perturbations, *Rocky Mountain J. Math.*
- [95] (with Karl P. Hadeler) Monotone dependence of the spectral bound on the transition rates in linear compartment models, *J. Math. Biology*
- [96] (with Abdessamad Tridane and Yang Kuang) An epidemic model with post-contact prophylaxis of distributed length. II. Stability and oscillations if treatment is fully effective, *Mathematical Modelling of Natural Phenomena*
- [97] (with Thanate Dhirasakdanon, Zhun Han, Roy Trevino) Species decline and extinction: synergy of infectious disease and Allee effect? *J. Biol. Dynamics*

Papers submitted for publication

(with Thanate Dhirasakdanon) Persistence of vertically transmitted parasite strains which protect against more virulent horizontally transmitted strains

Non-refereed publications

- [1] Some mathematical considerations of how to stop the spatial spread of a rabies epidemic. *Biological Growth and Spread* (W. Jäger, H. Rost, P. Tautu, eds.), 310-319. Lecture Notes in Biomathematics 38. Springer 1980
- [2] Global asymptotic stability in epidemic models. Proceedings *Equadiff 82* (H.W. Knobloch, K. Schmitt, eds.), 608-615. Lecture Notes in Mathematics 1017. Springer 1983
- [3] A differential-integral equation modeling the dynamics of populations with a rank structure. *The Dynamics of Physiologically Structured Populations*. (Metz, J.A.J.; Diekmann, O.; eds.). Lecture Notes in Biomathematics 68, 496-511. Springer 1986
- [4] (with C. Castillo-Chavez) On the role of variable infectivity in the dynamics of the human immunodeficiency virus epidemic. *Mathematical and Statistical Approaches to*

AIDS Epidemiology (C. Castillo-Chavez, ed.). Lecture Notes in Biomathematics 83, 157-176. Springer 1989

- [5] (with S. Busenberg and M. Iannelli) Dynamics of an age-structured epidemic model. *Dynamical Systems* (Liao Shan-Tao, Ye Yan-Qian, Ding Tong-Ren, eds.), 1-19. World Scientific 1993

Book reviews

Evolutionary Games and Population Dynamics, by Josef Hofbauer and Karl Sigmund, *Bull. Math. Biol.* **61** (1999), 799-805

Spatial Deterministic Epidemics, by Linda Rass and John Radcliffe, AMS, 2003, *Math. Biosci* **202** (2006), 218-225

Perturbations of Positive Semigroups with Applications, by Jacek Banasiak and Luisa Arlotti, Springer 2006, *SIAM Review* **49** (2007), 355-360

Special issues and conference proceedings edited

(with M. Martelli, K.L. Cooke, E. Cumberbatch, Betty Tang) *Differential Equations and Applications to Biology and Industry*, Proc. of the Claremont International Conference dedicated to the memory of Stavros Busenberg, World Scientific 1996

(with Suzanne Lenhart) Modeling and Control of Natural Resources, *Natural Resource Modeling* **18** Issue 3 (Fall 2005)

(with Suzanne Lenhart) Dynamic Aspects of Competition, Adaptation, and Patchiness in Ecology, *Natural Resource Modeling* **18** Issue 4 (Winter 2005)